K 6

```
FFFFFFFFFFFFFFF     OOOOOOOOO     RRRRRRRRRRRR     RRRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
FFFFFFFFFFFFFFF     OOOOOOOOO     RRRRRRRRRRRR     RRRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
FFFFFFFFFFFFFFF     OOOOOOOOO     RRRRRRRRRRRR     RRRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
FFF              OOO         OOO  RRR         RRR  RRR         RRR        TTT        LLL
FFF              OOO         OOO  RRR         RRR  RRR         RRR        TTT        LLL
FFF              OOO         OOO  RRR         RRR  RRR         RRR        TTT        LLL
FFF              OOO         OOO  RRR         RRR  RRR         RRR        TTT        LLL
FFF              OOO         OOO  RRR         RRR  RRR         RRR        TTT        LLL
FFFFFFFFFFFF     OOO         OOO  RRRRRRRRRRRR     RRRRRRRRRRRR           TTT        LLL
FFFFFFFFFFFF     OOO         OOO  RRRRRRRRRRRR     RRRRRRRRRRRR           TTT        LLL
FFFFFFFFFFFF     OOO         OOO  RRRRRRRRRRRR     RRRRRRRRRRRR           TTT        LLL
FFF              OOO         OOO  RRR   RRR        RRR   RRR              TTT        LLL
FFF              OOO         OOO  RRR   RRR        RRR   RRR              TTT        LLL
FFF              OOO         OOO  RRR   RRR        RRR   RRR              TTT        LLL
FFF              OOO         OOO  RRR      RRR     RRR      RRR           TTT        LLL
FFF              OOO         OOO  RRR      RRR     RRR      RRR           TTT        LLL
FFF              OOO         OOO  RRR      RRR     RRR      RRR           TTT        LLL
FFF                 OOOOOOOOO     RRR         RRR  RRR         RRR        TTT        LLLLLLLLLLLLLLL
FFF                 OOOOOOOOO     RRR         RRR  RRR         RRR        TTT        LLLLLLLLLLLLLLL
FFF                 OOOOOOOOO     RRR         RRR  RRR         RRR        TTT        LLLLLLLLLLLLLLL
```

```
**FILE**ID**FORCB                                   E  7




FFFFFFFFFF    000000    RRRRRRRR      CCCCCCCC  BBBBBBBB
FFFFFFFFFF    000000    RRRRRRRR      CCCCCCCC  BBBBBBBB
FF          OO      OO  RR      RR  CC          BB      BB
FF          OO      OO  RR      RR  CC          BB      BB
FF          OO      OO  RR      RR  CC          BB      BB
FF          OO      OO  RR      RR  CC          BB      BB
FFFFFFFF    OO      OO  RRRRRRRR    CC          BBBBBBBB
FFFFFFFF    OO      OO  RRRRRRRR    CC          BBBBBBBB
FF          OO      OO  RR  RR      CC          BB      BB
FF          OO      OO  RR  RR      CC          BB      BB
FF          OO      OO  RR    RR    CC          BB      BB      ....
FF          OO      OO  RR    RR    CC          BB      BB      ....
FF            000000    RR      RR    CCCCCCCC  BBBBBBBB        ....
FF            000000    RR      RR    CCCCCCCC  BBBBBBBB        ....

LL            IIIIII      SSSSSSSS
LL            IIIIII      SSSSSSSS
LL              II      SS
LL              II      SS
LL              II      SS
LL              II      SS
LL              II        SSSSSS
LL              II        SSSSSS
LL              II              SS
LL              II              SS
LL              II              SS
LL              II              SS
LLLLLLLLLL    IIIIII    SSSSSSSS
LLLLLLLLLL    IIIIII    SSSSSSSS
```

```
0 MODULE FOR$$CB (%TITLE 'Push, Pop, Allocate, and deallocate LUB/ISB/RAB'
0                 IDENT = '2-005'          ! File: FORCB.B32  Edit: LEB2005
0                 ) =
1 BEGIN
1 !
1 !****************************************************************************
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1 !*                                                                          *
1 !*                                                                          *
1 !****************************************************************************
1
1 !++
1 ! FACILITY: language support library
1 !
1 ! ABSTRACT:
1 !
1 !       This module interfaces to FOR$$CCB_DATA to allocate,
1 !       deallocate, push and pop the LUB/ISB/RAB data structure, which
1 !       is central to the I/O system.
1 !
1 ! ENVIRONMENT: User mode, AST level or not or mixed
1 !
1 ! AUTHOR:  Thomas N. Hastings, CREATION DATE: 01-June-77
1 !
1 ! MODIFIED BY:
1 !
1 !       Thomas N. Hastings, 01-June-77: VERSION 01
1 ! [Previous edit history removed.  SBL 24-Sept-1982]
1 ! 1-032 - Remove AST reentrancy window by performing IOINPROG interlock before
1 !         LUN_OWNR test in FOR$$CB_PUSH.  Replace individual zeroing of ISB
1 !         bits with a zero of the word in which they are contained for better
1 !         code.  Use a new structure for OTS$$V_LUN_OWNR for smaller code.
1 !         SBL 25-Sept-1980
1 ! 1-033 - Include secondary message FOR$_IO_NONFOR when signaling
1 !         FOR$K_MIXFILACC.  JAW 29-Aug-1981
1 ! 1-034 - Clear OTS$$V_IOINPROG before signaling FOR$K_MIXFILACC, to
1 !         ensure that unit is left in a consistent state.  SPR 11-38566.
1 !         JAW 29-Aug-1981
1 ! 1-035 - Replace $DESCRIPTOR in edit 1-033 with UPLIT to keep code PIC.
1 !         JAW 31-Aug-1981
```

```
1 ! 1-036 - Add missing external declarations.  SBL 2-Dec-1981
1 ! 2-001 - Remove all references to OTS$$ routines and data structures.
1 !         The data structures are now FORTRAN-only, although their layout
1 !         and use is still in parallel with BASIC's.  Change to use
1 !         prologue file, and general cleanup for inclusion in FORRTL
1 !         shared image.  SBL 24-Sept-1982
1 ! 2-002 - Use ISB$A_PREVIOUS_LUB for backlink to previous LUB instead of
1 !         second entry in FOR$$AA_LUB_TAB.  Add logic to allow simultaneous
1 !         ENCODE/DECODE/Internal File operations.  SBL 2-Dec-1982
1 ! 2-003 - Allocate FAB and NAM along with RAB and rest of CCB from heap.
1 !         SBL 17-Jan-1983
1 ! 2-004 - Deallocate RFA cache if necessary.  SBL 2-June-1983
1 ! 2-005 - Change reference in DEALLOCATE from LUB$A_RFA_CACHE_PTR to
1 !         LUB$A_RFA_CACHE_BEG to fix problem with BACKSPACE.
1 !         LEB 27-Jan-1984
1 !--
1
```

```
;   76          0075  1 %SBTTL'Declarations'
;   77          0076  1 !
;   78          0077  1 ! PROLOGUE FILE:
;   79          0078  1 !
;   80          0079  1
;   81          0080  1 REQUIRE 'RTLIN:FORPROLOG';                         ! Structure and symbol definitions
;   82          0146  1
;   83          0147  1 !
;   84          0148  1 ! TABLE OF CONTENTS:
;   85          0149  1 !
;   86          0150  1
;   87          0151  1 FORWARD ROUTINE
;   88          0152  1     FOR$$CB_PUSH : JSB_CB_PUSH NOVALUE,            ! Allocate or find  LUB/ISB/RAB - beg of each I/O statment
;   89          0153  1     ALLOCATE : CALL_CCB NOVALUE,                   ! Allocate CCB
;   90          0154  1     FOR$$CB_POP : JSB_CB_POP NOVALUE,              ! Pop LUB/ISB/RAB - end of each I/O statement
;   91          0155  1     DEALLOCATE : CALL_CCB NOVALUE,                 ! Deallcoate CCB
;   92          0156  1     FOR$$CB_GET : JSB_CB_GET NOVALUE,              ! Get current LUB/ISB/RAB (called by non-shared code only)
;   93          0157  1     FOR$$CB_FETCH : CALL_CCB NOVALUE,              ! Fetch a LUB, or 0
;   94          0158  1     FOR$$NEXT_LUN : NOVALUE,                       ! Get next FORTRAN LUN.
;   95          0159  1     FOR$$FP_MATCH : CALL_CCB NOVALUE,              ! Get CCB that matches FP
;   96          0160  1     INITIALIZE_INTFIL_QUEUE: NOVALUE;              ! Initialize INTFIL_QUEUE
;   97          0161  1
;   98          0162  1 !+
;   99          0163  1 ! Include FOR$$CB_RET as a synonym for FOR$$CB_POP to maintain
;  100          0164  1 ! compatability with old versions of FOR$$ERROR.
;  101          0165  1 !-
;  102          0166  1
;  103          0167  1 GLOBAL BIND
;  104          0168  1     ROUTINE
;  105          0169  1     FOR$$CB_RET = FOR$$CB_POP : JSB_CB_POP NOVALUE;
;  106          0170  1
;  107          0171  1 !
;  108          0172  1 ! GLOBAL STORAGE:
;  109          0173  1 !
;  110          0174  1
;  111          0175  1 GLOBAL
;  112          0176  1     FOR$$A_CUR_LUB : INITIAL (0);        ! Contains the address of the current LUB
;  113          0177  1
;  114          0178  1 !+
;  115          0179  1 ! The following structure is used for addressing FOR$$AA_LUB_TAB.
;  116          0180  1 ! It is similar to VECTOR, but offsets the index so that
;  117          0181  1 ! negative logical unit numbers can be used.
;  118          0182  1 !-
;  119          0183  1
;  120          0184  1 STRUCTURE
;  121          0185  1     FOR$$LUB_TAB_ST [I; N, LB, UNIT = 4, EXT = 0] =
;  122          0186  1         [N*UNIT]
;  123          0187  1         (FOR$$LUB_TAB_ST + ((I - LB)*UNIT))<0, %BPUNIT*UNIT, EXT>;
;  124          0188  1
;  125          0189  1 !+
;  126          0190  1 ! The following table of longwords is used to associate LUB addresses with
;  127          0191  1 ! unit numbers.  Each entry contains 0 if there is no
;  128          0192  1 ! LUB, or the address of the LUB.
;  129          0193  1 !-
;  130          0194  1
;  131          0195  1 GLOBAL
;  132          0196  1     FOR$$AA_LUB_TAB : VOLATILE FOR$$LUB_TAB_ST
```

```
        [-LUB$K_ILUN_MIN + LUB$K_LUN_MAX + 1, LUB$K_ILUN_MIN];

!
! OWN STORAGE:
!

!+
! Each bit of the following BITVECTOR corresponds to a LUN.  The bit is
! set if there is any I/O activity outstanding for the LUN.  The bit
! must be kept here rather than in the LUB because there can be I/O
! activity outstanding even before the LUB is allocated.
!
! The name FOR$$V_IOINPROG is bound to the appropriate offset in the
! bitvector so that the correct bit can be directly addressed by unit number.
!-

OWN
    IOINPROG_VECTOR : VOLATILE BITVECTOR
        [((-[LUB$K_ILUN_MIN + LUB$K_LUN_MAX + %BPVAL)/%BPVAL)*%BPVAL];
BIND
    FOR$$V_IOINPROG = IOINPROG_VECTOR [((7-LUB$K_ILUN_MIN)/8)*8]:
        VOLATILE BITVECTOR [];

!+
! The following is a queue (non-interlocked) that holds LUBs for ENCODE/DECODE
! and internal file operations.  This permits more than one of these operations
! to be active simultaneously.
!-

OWN
    INTFIL_QUEUE: VOLATILE VECTOR [2] INITIAL (0,0),
    V_INTFIL_QUEUE_INIT: VOLATILE INITIAL (0);  ! 1 when queue initialized

!
! EXTERNAL REFERENCES:
!

EXTERNAL ROUTINE
    FOR$$ERRSNS_SAV : NOVALUE,
    FOR$$SIG_NO_LUB : NOVALUE,                          ! convert FORTRAN err # to 32-bit code
                                                        ! Pass LUN explicitly since no current LUB.
                                                        ! and call LIB$STOP. should never return
    FOR$$SIG_DATCOR : NOVALUE,                          ! SIGNAL_STOP OTS$_INTDATCOR (INTERNAL
                                                        ! DATA CORRUPTED IN RUN-TIME LIBRARY)
                                                        ! in FORTRAN environment
    FOR$$SIGNAL_STO : NOVALUE,                          ! Signal a fatal FORTRAN error
    FOR$$GET_VM,                                        ! Get virtual memory
    FOR$$FREE_VM : NOVALUE;                             ! Free virtual memory
```

```
1 GLOBAL ROUTINE FOR$$CB_PUSH (%SBTTL'Allocate or find CCB'
1           LOGICAL_UNIT,                           ! Logical unit no. (by-value)
1           LUN_MIN)                                ! Minimum logical unit number (by-value)
1     : JSB_CB_PUSH NOVALUE =
1
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !         FOR$$CB_PUSH checks for legal logical UNIT number
1 !         which varyies depending on whether this is OPEN or
1 !         default open.  If logical_unit already has
1 !         a LUB/ISB/RAB allocated, only part of the per I/O statement part
1 !         of LUB/ISB/RAB is cleared, namely just the status bits in ISB.
1 !         Otherwise virtual memory is allocated for this logical_unit
1 !         and the entire block is initialized to 0.  Then the allocated address
1 !         is remembered in OWN table FOR$$A_LUB_TAB indexed by
1 !         logical_unit.  The RAB is initialized to constants which
1 !         do not change during execution.
1 !
1 !         If an I/O statement on this unit is already in progress, this
1 !         routine signals an error and does not return.
1 !
1 ! CALLING SEQUENCE:
1 !
1 !         JSB FOR$$CB_PUSH (R2=logical_unit.rl.v, R0=lun_min.rl.v)
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !         LOGICAL_UNIT.rl.v       Value of logical unit for which LUB/ISB/RAB is desired (signed)
1 !                                 May be negative for TYPE, ACCEPT, READ, PRINT
1 !         LUN_MIN.rl.v            Value of minimum legal logical unit number (signed)
1 !                                 Since in a register, must be present.
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !         FOR$$AA_LUB_TAB[logical_unit]   Adr. of LUB/ISB/RAB or 0 for
1 !                                         this unit
1 !         FOR$$V_IOINPROG[logical unit]   I/O in progress flag
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !         CCB                             Base pointer set to adr. of LUB/ISB/RAB for logical_unit.
1 !         FOR$$AA_LUB_TAB[logical_unit]   Adr. of LUB/ISB/RAB for logical_unit
1 !         LUB$W_LUN                       signed logical unit number
1 !         RAB$B_BID
1 !         RAB$B_BLN
1 !         RAB$V_TPT                       1
1 !         RAB$V_RAH                       1
1 !         RAB$V_WBH                       1
1 !         RAB$V_LOC                       1
1 !
1 ! ROUTINE VALUE:
1 !
1 !         None
1 !
1 ! SIDE EFFECTS:
1 !
```

```
1 !         Allocates virtual memory if needed.
1 !         SIGNAL_STOPs FOR$_RECIO_OPE (40='RECURSIVE I/O OPERATION') if
1 !         logical_unit already is in the middle of an I/O statement
1 !         SIGNAL_STOPs FOR$_INVLOGUNI (32='INVALID LOGICAL UNIT NUMBER')
1 !         if logical_unit is out of range.
1 !         SIGNAL_STOPs FOR$_INSVIRMEM (41='INSUFFICIENT VIRTUAL MEMORY')
1 !         if cannot expand program region if needed.
1 !--
1
2      BEGIN
2
2      BUILTIN
2          TESTBITSS;
2
2      EXTERNAL REGISTER
2          CCB : REF $FOR$CCB_DECL;
2
2      !+
2      ! Check range of logical_unit.  If out of range,
2      ! SIGNAL_STOP FOR$_INVLOGUNI (32='INVALID LOGICAL UNIT NUMBER')
2      !-
2
3      IF ((.LOGICAL_UNIT GTR LUB$K_LUN_MAX) OR (.LOGICAL_UNIT LSS .LUN_MIN))
2      THEN
3          BEGIN
3          FOR$$SIG_NO_LUB (FOR$K_INVLOGUNI, .LOGICAL_UNIT);
3          RETURN;
2          END;
2
2      !+
2      ! Test and set IO in progress interlock before doing anything else!
2      ! If this is ENCODE/DECODE/Internal File, ignore interlock.
2      !-
2
3      IF (TESTBITSS (FOR$$V_IOINPROG [.LOGICAL_UNIT]))
2      THEN
2          IF .LOGICAL_UNIT NEQ LUB$K_LUN_ENCD
2          THEN
3              BEGIN
3              FOR$$SIG_NO_LUB (FOR$K_RECIO_OPE, .LOGICAL_UNIT);
3              RETURN;
2              END;
2
2      !+
2      ! The following assignment generates no code, but it causes BLISS to generate
2      ! optimal code for the remainder of the routine by preventing the CSE
2      ! .LOGICAL_UNIT-LUB$K_ILUN_MIN from being bound to R2.  Thanks, and a tip
2      ! of the keyboard to Steve Hobbs.
2      !-
2
2      LOGICAL_UNIT = .LOGICAL_UNIT;
2
2      !+
2      ! Get the CCB address for this unit.
2      !-
2
2      CCB = .FOR$$AA_LUB_TAB [.LOGICAL_UNIT];
```

```

	!+
	! Allocate a LUB/ISB/RAB if necessary.
	!-

	IF .CCB EQLA 0
	THEN
	    ALLOCATE (.LOGICAL_UNIT)
	ELSE
	!+
	! LUB/ISB/RAB already allocated.  Perform sanity check.
	!-
	    BEGIN

	    IF ((.CCB [LUB$W_LUN] NEQU .LOGICAL_UNIT<0,16,1>) OR
		(.CCB [RAB$B_BID] NEQU RAB$C_BID))
	    THEN
		FOR$$SIG_DATCOR ();
	    END;

	!+
	! Initialize certain ISB fields, to save FOR$$IO_BEG the trouble.
	!-

	CCB [ISB$W_STTM_STAT] = 0;
	CCB [ISB$W_FMT_LEN] = 0;
	CCB [ISB$A_USER_FP] = 0;

	!+
	! Link in previous LUB and make this LUB the current one.
	!-

	CCB [ISB$A_PREVIOUS_LUB] = .FOR$$A_CUR_LUB;
	FOR$$A_CUR_LUB = .CCB;

	!+
	! Return with register CCB loaded.
	!-

	RETURN;
	END;					! End of routine FOR$$CB_PUSH

;                                                .TITLE  FOR$$CB Push, Pop, Allocate, and deallocate LUB
                                                                 /ISB/RAB
                                                 .IDENT  \2-005\

                                                 .PSECT  _FOR$DATA,NOEXE,  PIC,2

                    00000000  00000 FOR$$A_CUR_LUB::
                                                 .LONG   0                                      ;
                              00004 FOR$$AA_LUB_TAB::
                                                 .BLKB   512
                              00204 IOINPROG_VECTOR:
                                                 .BLKB   16
          00000000  00000000  00214 INTFIL_QUEUE:
                                                 .LONG   0, 0                                   ;
```

```
                                       00000000  0021C V_INTFIL_QUEUE_INIT:
                                                                .LONG    0                                                       ;

                                                       FOR$$V_IOINPROG=      IOINPROG_VECTOR+1
                                                                .EXTRN   FOR$$ERRSNS_SAV
                                                                .EXTRN   FOR$$SIG_NO_LUB
                                                                .EXTRN   FOR$$SIG_DATCOR
                                                                .EXTRN   FOR$$SIGNAL_STO
                                                                .EXTRN   FOR$$GET_VM, FOR$$FREE_VM

                                                                .PSECT   _FOR$CODE,NOWRT,  SHR,  PIC,2

                    00000077   8F           52  D1 00000 FOR$$CB_PUSH::
                                                                CMPL     LOGICAL_UNIT, #119                                     ; 0325
                                            05  14 00007        BGTR     1$                                                      ;
                               50           52  D1 00009        CMPL     LOGICAL_UNIT, LUN_MIN                                   ;
                                            06  18 0000C        BGEQ     2$                                                      ;
                                            52  DD 0000E 1$:    PUSHL    LOGICAL_UNIT                                           ; 0328
                                            20  DD 00010        PUSHL    #32                                                     ;
                                            15  11 00012        BRB      3$                                                      ;
                 15 00000000'  EF           52  E3 00014 2$:    BBCS     LOGICAL_UNIT, FOR$$V_IOINPROG, 4$                      ; 0337
                    FFFFFFFB   8F           52  D1 0001C        CMPL     LOGICAL_UNIT, #-5                                      ; 0339
                                            0C  13 00023        BEQL     4$                                                      ;
                                            52  DD 00025        PUSHL    LOGICAL_UNIT                                           ; 0342
                                            28  DD 00027        PUSHL    #40                                                     ;
                    00000000G  00           02  FB 00029 3$:    CALLS    #2, FOR$$SIG_NO_LUB                                     ;
                                            05     00030        RSB                                                              ; 0341
                               5B 00000000'EF42 D0 00031 4$:    MOVL     FOR$$AA_LUB_TAB+32[LOGICAL_UNIT], CCB                  ; 0359
                                            09  12 00039        BNEQ     5$                                                      ; 0365
                                            52  DD 0003B        PUSHL    LOGICAL_UNIT                                           ; 0367
                        0000V  CF           01  FB 0003D        CALLS    #1, ALLOCATE                                            ;
                                            12  11 00042        BRB      7$                                                      ;
                               52       C6  AB  B1 00044 5$:    CMPW     -58(CCB), LOGICAL_UNIT                                 ; 0374
                                            05  12 00048        BNEQ     6$                                                      ;
                               01           6B  91 0004A        CMPB     (CCB), #1                                               ; 0375
                                            07  13 0004D        BEQL     7$                                                      ;
                    00000000G  00           00  FB 0004F 6$:    CALLS    #0, FOR$$SIG_DATCOR                                     ; 0377
                                        96  AB  B4 00056 7$:    CLRW     -106(CCB)                                               ; 0384
                                      FF72  CB  B4 00059        CLRW     -142(CCB)                                               ; 0385
                                      FF4C  CB  D4 0005D        CLRL     -180(CCB)                                               ; 0386
                        FF48   CB 00000000'  EF  D0 00061        MOVL     FOR$$A_CUR_LUB, -184(CCB)                              ; 0392
                    00000000'  EF           5B  D0 0006A        MOVL     CCB, FOR$$A_CUR_LUB                                     ; 0393
                                            05     00071        RSB                                                              ; 0400

; Routine Size:  114 bytes,     Routine Base:  _FOR$CODE + 0000


;  338           0401  1
```

```
1 ROUTINE ALLOCATE (%SBTTL'Allocate CCB'
1         LOGICAL_UNIT                                  ! LUN to which to allocate the CCB
1     ) : CALL_CCB NOVALUE =                            ! Allocate LUB/ISB/RAB
1
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       Allocate heap storage for the LUB/ISB/RAB/FAB/NAM.  This is done
1 !       the first time a logical unit is referenced, and the first
1 !       time after a CLOSE.
1 !
1 !       If this is an ENCODE/DECODE/Internal File, try getting a "short LUB"
1 !       from Q_INTFIL_QUEUE.  If empty, allocate a short LUB.
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       ALLOCATE (.LOGICAL_UNIT)
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       LOGICAL_UNIT.rl.v       LUN to which to allocate the CCB
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       INTFIL_QUEUE            Queue of internal file LUBs
1 !
1 ! IMPLICIT OUTPUTS
1 !
1 !       FOR$$AA_LUB_TAB [.LOGICAL_UNIT] and CCB are set
1 !
1 ! SIDE EFFECTS:
1 !
1 !       Allocates virtual storage.
1 !       Signals if virtual storage is exhausted.
1 !
1 !--
1
2   BEGIN
2
2   EXTERNAL REGISTER
2       CCB : REF $FOR$CCB_DECL;
2
2   BIND
2       FAB = CCB: REF $FOR$FAB_CCB_STRUCT,
2       NAM = CCB: REF $FOR$NAM_CCB_STRUCT;
2
2   BUILTIN
2       REMQUE;
2
2   !+
2   ! Split depending on whether or not this is an internal file.
2   !-
2
2   IF .LOGICAL_UNIT NEQ LUB$K_LUN_ENCD
2   THEN
3       BEGIN
3
```

```
3              !+
3              ! This is not an internal file or ENCODE/DECODE.  Allocate a full-length
3              ! LUB from heap storage and initialize it.
3              !-
3
4              CCB = FOR$$GET_VM ((ISB$K_ISB_LEN + LUB$K_LUB_LEN + RAB$C_BLN +
3                  FAB$C_BLN + NAM$C_BLN), .LOGICAL_UNIT);
3              CH$FILL (0, LUB$K_LUB_LEN + RAB$C_BLN + FAB$C_BLN + NAM$C_BLN,
3                  .CCB + ISB$K_ISB_LEN);
3              CCB = .CCB + ISB$K_ISB_LEN + LUB$K_LUB_LEN;
3              CCB [LUB$W_LUN] = .LOGICAL_UNIT;
3              CCB [RAB$B_BID] = RAB$C_BID;
3              CCB [RAB$B_BLN] = RAB$C_BLN;
3              FAB [FAB$B_BID] = FAB$C_BID;
3              FAB [FAB$B_BLN] = FAB$C_BLN;
3              NAM [NAM$B_BID] = NAM$C_BID;
3              NAM [NAM$B_BLN] = NAM$C_BLN;
3              CCB [RAB$L_FAB] = FAB [0,0,0,0];
3
3              CCB [RAB$V_TPT] = 1;
3              CCB [RAB$V_RAH] = 1;
3              CCB [RAB$V_WBH] = 1;
3              CCB [RAB$V_LOC] = 1;
3              FOR$$AA_LUB_TAB [.LOGICAL_UNIT] = .CCB;
3              RETURN;
2              END;
2
2          !+
2          ! This is an internal file or ENCODE/DECODE.  First check to see if the
2          ! queue of LUBs has been intialized.  If not, initialize it.
2          !-
2
2          IF NOT .V_INTFIL_QUEUE_INIT
2          THEN
2              INITIALIZE_INTFIL_QUEUE ();
2
2          !+
2          ! Try to remove a LUB from the head of the queue.  If empty,
2          ! allocate one instead.
2          !-
2
2          IF REMQUE (.INTFIL_QUEUE [0], CCB)
2          THEN
3              BEGIN
3              !+
3              ! Queue was empty.  Allocate a short LUB and initialize it.
3              !-
3
3              CCB = FOR$$GET_VM ((ISB$K_ISB_LEN + LUB$K_LUB_LEN + RAB$C_BLN),
3                  .LOGICAL_UNIT);
3              CH$FILL (0, LUB$K_LUB_LEN + RAB$C_BLN, .CCB + ISB$K_ISB_LEN);
3              CCB = .CCB + ISB$K_ISB_LEN + LUB$K_LUB_LEN;
3              CCB [LUB$W_LUN] = .LOGICAL_UNIT;
3              CCB [RAB$B_BID] = RAB$C_BID;
3              CCB [LUB$V_DEALLOC] = 1;           ! Force "deallocation" on POP
3              END
2          ELSE
```

```
                                                    C  8
FOR$$CB          Push, Pop, Allocate, and deallocate LUB/ISB/RAB 16-Sep-1984 00:13:56    VAX-11 Bliss-32 V4.0-742              Page  11
2-005            Allocate CCB                                    14-Sep-1984 12:31:38    DISK$VMSMASTER:[FORRTL.SRC]FORCB.B32;1    (4)

;  454           0516  2        CCB = .CCB + ISB$K_ISB_LEN + LUB$K_LUB_LEN;      ! Get right base for CCB
;  455           0517  2
;  456           0518  2     RETURN;      ! With LUB address in CCB
;  457           0519  1     END;



                                          00FC 00000 ALLOCATE:
                                                                   .WORD    Save R2,R3,R4,R5,R6,R7                           ; 0402
                              57 00000000G   00   9E 00002         MOVAB    FOR$$GET_VM, R7                                  ;
                              56 00000000'   EF   9E 00009         MOVAB    FOR$$AA_LUB_TAB+32, R6                           ;
                    FFFFFFFB  8F         04   AC   D1 00010         CMPL     LOGICAL_UNIT, #-5                                ; 0455
                                              4A   13 00018         BEQL     1$                                               ;
                                         04   AC   DD 0001A         PUSHL    LOGICAL_UNIT                                     ; 0465
                              7E       0214   8F   3C 0001D         MOVZWL   #532, -(SP)                                      ; 0464
                              67              02   FB 00022         CALLS    #2, FOR$$GET_VM                                  ;
                              5B              50   D0 00025         MOVL     R0, CCB                                          ;
   0158   8F          00      6E              00   2C 00028         MOVC5    #0, (SP), #0, #344, 188(CCB)                     ; 0467
                                       00BC   CB      0002F                                                                   ;
                              5B       0120   CB   9E 00032         MOVAB    288(R11), CCB                                    ; 0468
                         C6   AB         04   AC   B0 00037         MOVW     LOGICAL_UNIT, -58(CCB)                           ; 0469
                              6B       4401   8F   B0 0003C         MOVW     #17409, (CCB)                                    ; 0470
                         44   AB       5003   8F   B0 00041         MOVW     #20483, 68(CCB)                                  ; 0472
                       0094   CB       6002   8F   B0 00047         MOVW     #24578, 148(CCB)                                 ; 0474
                         3C   AB         44   AB   9E 0004E         MOVAB    68(CCB), 60(CCB)                                 ; 0476
                         04   AB 00010602   8F   C8 00053         BISL2    #67074, 4(CCB)                                   ; 0481
                              50         04   AC   D0 0005B         MOVL     LOGICAL_UNIT, R0                                 ; 0482
                            6640              5B   D0 0005F         MOVL     CCB, FOR$$AA_LUB_TAB+32[R0]                      ;
                                                   04 00063         RET                                                       ; 0457
                              05       01F8   C6   E8 00064 1$:     BLBS     V_INTFIL_QUEUE_INIT, 2$                          ; 0491
                       0000V  CF              00   FB 00069         CALLS    #0, INITIALIZE_INTFIL_QUEUE                      ; 0493
                              5B       01F0   D6   0F 0006E 2$:     REMQUE   @INTFIL_QUEUE, CCB                               ; 0500
                                              2A   1C 00073         BVC      3$                                               ;
                                         04   AC   DD 00075         PUSHL    LOGICAL_UNIT                                     ; 0508
                              7E       0164   8F   3C 00078         MOVZWL   #356, -(SP)                                      ; 0507
                              67              02   FB 0007D         CALLS    #2, FOR$$GET_VM                                  ;
                              5B              50   D0 00080         MOVL     R0, CCB                                          ;
   00A8   8F          00      6E              00   2C 00083         MOVC5    #0, (SP), #0, #168, 188(CCB)                     ; 0509
                                       00BC   CB      0008A                                                                   ;
                              5B       0120   CB   9E 0008D         MOVAB    288(R11), CCB                                    ; 0510
                         C6   AB         04   AC   B0 00092         MOVW     LOGICAL_UNIT, -58(CCB)                           ; 0511
                              6B              01   90 00097         MOVB     #1, (CCB)                                        ; 0512
                         FF   AB              10   88 0009A         BISB2    #16, -1(CCB)                                     ; 0513
                                                   04 0009E         RET                                                       ; 0500
                              5B       0120   CB   9E 0009F 3$:     MOVAB    288(R11), CCB                                    ; 0516
                                                   04 000A4         RET                                                       ; 0519

; Routine Size:  165 bytes,    Routine Base:  _FOR$CODE + 0072


;  458           0520  1
```

```
1 GLOBAL ROUTINE FOR$$CB_POP        %SBTTL'Pop current CCB'
1     : JSB_CB_POP NOVALUE =
1
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       FOR$$CB_POP pops the curents LUB/ISB/RAB and restores the
1 !       previous pushed down LUB/ISB/RAB, if any (usually none).
1 !       Flags old current LUB/ISB/RAB as no longer having as active I/O statement
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       JSB FOR$$CB_POP ()
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       NONE
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       CCB                     Adr. of current LUB/ISB/RAB
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       CCB                     Set to 0 (to catch attempt to reference after a pop).
1 !
1 ! RETURN VALUE:
1 !
1 !       NONE
1 !
1 ! SIDE EFFECTS:
1 !
1 !       Changes entire I/O system to another logical unit or none at all
1 !       SIGNAL_STOPs FORTRAN INTERNAL ERROR if CB was not active.
1 !--
1
2   BEGIN
2
2   BUILTIN
2       TESTBITCC;
2
2   EXTERNAL REGISTER
2       CCB : REF $FOR$CCB_DECL;
2
2   LOCAL
2       LOGICAL_UNIT;
2
2   !+
2   ! Pop this CCB.
2   !-
2
2   LOGICAL_UNIT = .CCB [LUB$W_LUN];
2   FOR$$A_CUR_LUB = .CCB [ISB$A_PREVIOUS_LUB];
2
2   !+
2   ! Deallocate run-time format
2   !-
```

```
;  517          0578  2
;  518          0579  3        IF (.CCB [ISB$W_FMT_LEN] NEQ 0)
;  519          0580  2        THEN
;  520          0581  3            BEGIN
;  521          0582  3            FOR$$FREE_VM (.CCB [ISB$W_FMT_LEN], .CCB [ISB$A_FMT_BEG]);
;  522          0583  3            CCB [ISB$W_FMT_LEN] = 0;
;  523          0584  3            CCB [ISB$A_FMT_BEG] = 0;
;  524          0585  2            END;
;  525          0586  2
;  526          0587  2        !+
;  527          0588  2        ! Deallocate this LUB if requested to.
;  528          0589  2        !-
;  529          0590  2
;  530          0591  3        IF (.CCB [LUB$V_DEALLOC])
;  531          0592  2        THEN
;  532          0593  2            DEALLOCATE (.LOGICAL_UNIT);
;  533          0594  2
;  534          0595  2        !+
;  535          0596  2        ! Flag old current LUB/ISB/RAB as no longer having
;  536          0597  2        ! an I/O statement in progress.
;  537          0598  2        ! If LUB was not active, then signal OTS$_INTDATCOR (INTERNAL DATA
;  538          0599  2        ! CORRUPTED IN RUN-TIME LIBRARY).
;  539          0600  2        !-
;  540          0601  2
;  541          0602  3        IF (TESTBITCC (FOR$$V_IOINPROG [.LOGICAL_UNIT]))
;  542          0603  2        THEN
;  543          0604  2            IF .LOGICAL_UNIT NEQU LUB$K_LUN_ENCD
;  544          0605  2            THEN
;  545          0606  2                FOR$$SIG_DATCOR ();
;  546          0607  2
;  547          0608  2        CCB = 0;
;  548          0609  2
;  549          0610  2        RETURN;
;  550          0611  2
;  551          0612  1        END;                                        ! End of FOR$$CB_POP routine



                          7E        C6   AB   32 00000 FOR$$CB_POP::
                                                               CVTWL   -58(CCB), LOGICAL_UNIT                     ; 0572
                 00000000'  EF    FF48   CB   D0 00004         MOVL    -184(CCB), FOR$$A_CUR_LUB                  ; 0573
                            50    FF72   CB   3C 0000D         MOVZWL  -142(CCB), R0                              ; 0579
                                         15   13 00012         BEQL    1$                                         ;
                                  FF7C   CB   DD 00014         PUSHL   -132(CCB)                                  ; 0582
                                         50   DD 00018         PUSHL   R0                                         ;
                 00000000G  00           02   FB 0001A         CALLS   #2, FOR$$FREE_VM                           ;
                                  FF72   CB   B4 00021         CLRW    -142(CCB)                                  ; 0583
                                  FF7C   CB   D4 00025         CLRL    -132(CCB)                                  ; 0584
              07        FF  AB           04   E1 00029 1$:     BBC     #4, -1(CCB), 2$                            ; 0591
                                         6E   DD 0002E         PUSHL   LOGICAL_UNIT                               ; 0593
                   0000V    CF           01   FB 00030         CALLS   #1, DEALLOCATE                             ;
              10 00000000'  EF           6E   E4 00035 2$:     BBSC    LOGICAL_UNIT, FOR$$V_IOINPROG, 3$          ; 0602
                 FFFFFFFB   8F           6E   D1 0003D         CMPL    LOGICAL_UNIT, #-5                          ; 0604
                                         07   13 00044         BEQL    3$                                         ;
                 00000000G  00           00   FB 00046         CALLS   #0, FOR$$SIG_DATCOR                        ; 0606
```

```
                                          5B  D4 0004D 3$:        CLRL    CCB                                    ; 0608
                        5E                04  C0 0004F            ADDL2   #4, SP                                 ; 0612
                                              05 00052            RSB                                            ;

; Routine Size:  83 bytes,    Routine Base:  _FOR$CODE + 0117

;  552          0613  1
```

```
1 ROUTINE DEALLOCATE (%SBTTL'Deallocate a CCB'
1       LOGICAL_UNIT                            ! The LUN on which to deallocate
1     ) : CALL_CCB NOVALUE =
1
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       Release the heap storage associated with a CCB.  This is done after
1 !       a CLOSE.  If the file is an internal file, insert the LUB on
1 !       INTFIL_QUEUE rather than deallocating it.
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       DEALLOCATE (.LOGICAL_UNIT)
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       LOGICAL_UNIT.rl.v       The LUN for which to deallocate the CCB
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       INTFIL_QUEUE
1 !       Several fields of the LUB
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       INTFIL_QUEUE
1 !       FOR$$A_LUB_TAB [.LOGICAL_UNIT] is cleared
1 !
1 ! SIDE EFFECTS:
1 !
1 !       Deallocates heap storage
1 !
1 !--
1
2     BEGIN
2
2     BUILTIN
2       INSQUE,
2       TESTBITCC;
2
2     EXTERNAL REGISTER
2       CCB : REF $FOR$CCB_DECL;
2
2     !+
2     ! Split depending on whether or not this is an internal file/ENCODE/DECODE.
2     !-
2
2     IF .CCB [LUB$W_LUN] NEQ LUB$K_LUN_ENCD
2     THEN
3       BEGIN
3
3       !+
3       ! Remove this LUB from the LUB table.
3       !-
3
3       FOR$$AA_LUB_TAB [.LOGICAL_UNIT] = 0;
```

```
        !+
        ! Deallocate record buffer, if present.
        !-

        IF (( NOT .CCB [LUB$V_USER_RBUF]) AND (.CCB [LUB$A_UBF] NEQA 0))
        THEN
            FOR$$FREE_VM (.CCB [LUB$W_RBUF_SIZE], .CCB [LUB$A_UBF]);

        !+
        ! Deallocate FAB if allocated by ASSIGN/FDBSET.  If filename
        ! also allocated, deallocate it.
        !-

        IF .CCB [LUB$A_FAB] NEQA 0
        THEN
            BEGIN
            LOCAL
                HEAP_FAB: REF BLOCK [, BYTE];
            HEAP_FAB = .CCB [LUB$A_FAB];
            IF .HEAP_FAB [FAB$B_FNS] NEQU 0
            THEN
                FOR$$FREE_VM (.HEAP_FAB [FAB$B_FNS], .HEAP_FAB [FAB$L_FNA]);
            FOR$$FREE_VM (.HEAP_FAB [FAB$B_BLN], .HEAP_FAB);
            END;

        !+
        ! Deallocate resultant name string, if present.
        !-

        IF (.CCB [LUB$V_VIRT_RSN])
        THEN
            FOR$$FREE_VM (.CCB [LUB$B_RSL], .CCB [LUB$A_RSN]);

        !+
        ! Deallocate RFA cache, if present.
        !-

        IF .CCB [LUB$A_RFA_CACHE_BEG] NEQA 0
        THEN
            FOR$$FREE_VM ((RCE_K_CACHE_SIZE * RCE_S_RCE_STRUCT),
                .CCB [LUB$A_RFA_CACHE_BEG]);

        !+
        ! Deallocate LUB memory.
        !-

        FOR$$FREE_VM ((ISB$K_ISB_LEN + LUB$K_LUB_LEN + RAB$C_BLN +
            FAB$C_BLN + NAM$C_BLN), .CCB - (ISB$K_ISB_LEN + LUB$K_LUB_LEN));

        RETURN;
        END;

    !+
    ! This is an ENCODE/DECODE/internal file. Insert the LUB on the queue.
    ! Use the first two longwords of the ISB as the queue link.
    !-
```

```
;  668          0728  2
;  669          0729  2        INSQUE (.CCB - (ISB$K_ISB_LEN + LUB$K_LUB_LEN), INTFIL_QUEUE);
;  670          0730  2
;  671          0731  2        RETURN;
;  672          0732  2
;  673          0733  1        END;



                                           000C 00000 DEALLOCATE:
                                                                   .WORD    Save R2,R3                                  ; 0614
                     53 00000000G   00    9E 00002                 MOVAB    FOR$$FREE_VM, R3
            FFFB     8F         C6  AB    B1 00009                 CMPW     -58(CCB), #-5                               ; 0662
                                6B  13    0000F                    BEQL     6$
                     50         04  AC    D0 00011                 MOVL     LOGICAL_UNIT, R0                            ; 0670
                       00000000'EF40      D4 00015                 CLRL     FOR$$AA_LUB_TAB+32[R0]
                                FF  AB    95 0001C                 TSTB     -1(CCB)                                     ; 0676
                                0F  19    0001F                    BLSS     1$                                          ;
                                9C  AB    D5 00021                 TSTL     -100(CCB)                                   ;
                                0A  13    00024                    BEQL     1$                                          ;
                                9C  AB    DD 00026                 PUSHL    -100(CCB)                                   ; 0678
                     7E         D2  AB    3C 00029                 MOVZWL   -46(CCB), -(SP)                             ;
                     63             02    FB 0002D                 CALLS    #2, FOR$$FREE_VM
                                E8  AB    D5 00030 1$:             TSTL     -24(CCB)                                    ; 0685
                                1C  13    00033                    BEQL     3$                                          ;
                     52         E8  AB    D0 00035                 MOVL     -24(CCB), HEAP_FAB                          ; 0690
                                34  A2    95 00039                 TSTB     52(HEAP_FAB)                                ; 0691
                                0A  13    0003C                    BEQL     2$                                          ;
                                2C  A2    DD 0003E                 PUSHL    44(HEAP_FAB)                                ; 0693
                     7E         34  A2    9A 00041                 MOVZBL   52(HEAP_FAB), -(SP)                         ;
                     63             02    FB 00045                 CALLS    #2, FOR$$FREE_VM                            ;
                                    52    DD 00048 2$:             PUSHL    HEAP_FAB                                    ; 0694
                     7E         01  A2    9A 0004A                 MOVZBL   1(HEAP_FAB), -(SP)                          ;
                     63             02    FB 0004E                 CALLS    #2, FOR$$FREE_VM                            ;
                     0A         FE  AB    E9 00051 3$:             BLBC     -2(CCB), 4$                                 ; 0701
                                F8  AB    DD 00055                 PUSHL    -8(CCB)                                     ; 0703
                     7E         F7  AB    9A 00058                 MOVZBL   -9(CCB), -(SP)                              ;
                     63             02    FB 0005C                 CALLS    #2, FOR$$FREE_VM                            ;
                                C8  AB    D5 0005F 4$:             TSTL     -56(CCB)                                    ; 0709
                                0B  13    00062                    BEQL     5$                                          ;
                                C8  AB    DD 00064                 PUSHL    -56(CCB)                                    ; 0712
                     7E       0190  8F    3C 00067                 MOVZWL   #400, -(SP)                                 ; 0711
                     63             02    FB 0006C                 CALLS    #2, FOR$$FREE_VM                            ;
                              FEE0  CB    9F 0006F 5$:             PUSHAB   -288(CCB)                                   ; 0719
                     7E       0214  8F    3C 00073                 MOVZWL   #532, -(SP)                                 ; 0718
                     63             02    FB 00078                 CALLS    #2, FOR$$FREE_VM                            ;
                                    04    0007B                    RET                                                  ; 0664
             00000000'  EF    FEE0  CB    0E 0007C 6$:             INSQUE   -288(CCB), INTFIL_QUEUE                     ; 0729
                                    04    00085                    RET                                                  ; 0733

; Routine Size:  134 bytes,    Routine Base:  _FOR$CODE + 016A


;  674          0734  1
;  676          0735  1 GLOBAL ROUTINE FOR$$CB_GET %SBTTL'GET current CCB'
;  677          0736  1     : JSB_CB_GET NOVALUE =
;  678          0737  1
;  679          0738  1 !++
;  680          0739  1 ! FUNCTIONAL DESCRIPTION:
;  681          0740  1 !
;  682          0741  1 !       FOR$$CB_GET gets the curents LUB/ISB/RAB.
;  683          0742  1 !       This routine is only called from non-shared procedures which
;  684          0743  1 !       can't access FOR$$A_CUR_LUB directly.  (Entry vectors for
;  685          0744  1 !       data would mean that the code would have to change when the
;  686          0745  1 !       decision to make a module shared or non-shared is changed.
;  687          0746  1 !       Unless the LINKER got smarter and changed the level of indirection
;  688          0747  1 !       on data references which were vectored.)
;  689          0748  1 !
;  690          0749  1 ! CALLING SEQUENCE:
;  691          0750  1 !
;  692          0751  1 !       JSB FOR$$CB_GET ()
;  693          0752  1 !
;  694          0753  1 ! FORMAL PARAMETERS:
;  695          0754  1 !
;  696          0755  1 !       NONE
;  697          0756  1 !
;  698          0757  1 ! IMPLICIT INPUTS:
;  699          0758  1 !
;  700          0759  1 !       FOR$$A_CUR_LUB          Adr. of current LUB/ISB/RAB
;  701          0760  1 !
;  702          0761  1 ! IMPLICIT OUTPUTS:
;  703          0762  1 !
;  704          0763  1 !       CCB                     Set to adr. of current LUB/ISB/RAB.
;  705          0764  1 !
;  706          0765  1 ! RETURN VALUE:
;  707          0766  1 !
;  708          0767  1 !       NONE
;  709          0768  1 !
;  710          0769  1 ! SIDE EFFECTS:
;  711          0770  1 !
;  712          0771  1 !       NONE
;  713          0772  1 !--
;  714          0773  1
;  715          0774  2     BEGIN
;  716          0775  2
;  717          0776  2     EXTERNAL REGISTER
;  718          0777  2         CCB : REF $FOR$CCB_DECL;
;  719          0778  2
;  720          0779  2     CCB = .FOR$$A_CUR_LUB;
;  721          0780  2
;  722          0781  2     RETURN
;  723          0782  2
;  724          0783  1     END;                                        ! End of FOR$$CB_GET routine



                         5B 00000000'  EF  D0 00000 FOR$$CB_GET::
                                                    MOVL    FOR$$A_CUR_LUB, CCB                               ; 0779
                                        05 00007    RSB                                                       ; 0783
```

```
; Routine Size:  8 bytes,    Routine Base:  _FOR$CODE + 01F0

;  725          0784  1
;  727      0785  1 GLOBAL ROUTINE FOR$$CB_FETCH (%SBTTL'Fetch a LUB, or 0'
;  728      0786  1         LUN                                      ! LUN of the LUB
;  729      0787  1     ) : CALL_CCB NOVALUE =
;  730      0788  1
;  731      0789  1 !++
;  732      0790  1 ! FUNCTIONAL DESCRIPTION:
;  733      0791  1 !
;  734      0792  1 !       FOR$$CB_FETCH returns the CCB address for a given LUN without
;  735      0793  1 !       "pushing" it.  This is used by FOR$$CLOSE_ALL and FOR$INQUIRE.
;  736      0794  1 !       ASTs must be disabled before FOR$$CB_FETCH is called and not
;  737      0795  1 !       reenabled until after the CCB is no longer needed.
;  738      0796  1 !
;  739      0797  1 ! CALLING SEQUENCE:
;  740      0798  1 !
;  741      0799  1 !       CALL FOR$$CB_FETCH (LUN)
;  742      0800  1 !
;  743      0801  1 ! FORMAL PARAMETERS:
;  744      0802  1 !
;  745      0803  1 !       LUN.rl.v                Logical Unit Number at which to "peek"
;  746      0804  1 !
;  747      0805  1 ! IMPLICIT INPUTS:
;  748      0806  1 !
;  749      0807  1 !       FOR$$V_LUN_OWNR         Table of LUN owners
;  750      0808  1 !       FOR$$AA_LUB_TAB         Table of pointers to LUBs
;  751      0809  1 !
;  752      0810  1 ! IMPLICIT OUTPUTS:
;  753      0811  1 !
;  754      0812  1 !       CCB                     This register is set to 0 if the LUN is not owned by FORTRAN
;  755      0813  1 !                               or is not allocated, or to the address of the LUB/ISB/RAB
;  756      0814  1 !                               otherwise.
;  757      0815  1 !
;  758      0816  1 ! RETURN VALUE:
;  759      0817  1 !
;  760      0818  1 !       NONE
;  761      0819  1 !
;  762      0820  1 ! SIDE EFFECTS:
;  763      0821  1 !
;  764      0822  1 !       NONE
;  765      0823  1 !--
;  766      0824  1
;  767      0825  2     BEGIN
;  768      0826  2
;  769      0827  2     EXTERNAL REGISTER
;  770      0828  2         CCB : REF $FOR$CCB_DECL;
;  771      0829  2
;  772      0830  2     CCB = .FOR$$AA_LUB_TAB [.LUN];
;  773      0831  2
;  774      0832  2     RETURN;
;  775      0833  1     END;                                         ! of routine FOR$$CB_FETCH



                                  0000 00000         .ENTRY  FOR$$CB_FETCH, Save nothing                    : 0785
                 50       04   AC   D0 00002         MOVL    LUN, R0                                        : 0830
                 5B 00000000'EF40   D0 00006         MOVL    FOR$$AA_LUB_TAB+32[R0], CCB                    :
```

```
                                          04 0000E          RET                                                               ; 0833

; Routine Size:  15 bytes,    Routine Base:  _FOR$CODE + 01F8


;  776          0834  1
```

```
1 GLOBAL ROUTINE FOR$$NEXT_LUN (%SBTTL'Get next LUN which might be open'
1       FLAG: REF VECTOR [, LONG],                  ! First-time and last-time flag
1       LUN: REF VECTOR [, LONG]                    ! Logical Unit Number
1   ) : NOVALUE =
1
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       FOR$$NEXT_LUN gets a LUN which might be open.  It is used by
1 !       the exit handler declared by FORTRAN OPEN, which must look
1 !       through all the LUNs and do the DELETE or PRINT handling by
1 !       calling CLOSE.  (RMS close won't do DELETE or PRINT handling.)
1 !       This routine scans the table of LUB pointers and returns those
1 !       which are non-zero.  The caller must use CB_PUSH and CB_POP
1 !       to obtain control of the LUB.
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       CALL FOR$$NEXT_LUN (FLAG, LUN)
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       FLAG.mv.r               If 0 on entry, this is the first call
1 !                               and LUN is invalid.  If 1 on entry, LUN
1 !                               is the last LUN processed.  On exit, 0
1 !                               means that there are no more LUNs, and 1
1 !                               means that LUN contains the Logical Unit
1 !                               Number to process.
1 !       LUN.ml.r                Logical Unit Number, as described above.
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       FOR$$AA_LUB_TAB
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       NONE
1 !
1 ! RETURN VALUE:
1 !
1 !       NONE
1 !
1 ! SIDE EFFECTS:
1 !
1 !       NONE
1 !--
1
2     BEGIN
2
2     LOCAL
2       LOCAL_LUN;
2
2     !+
2     ! If this is the first entry, arrange to return the first logical
2     ! unit.
2     !-
2
```

```
;  835      0892  2       IF NOT .FLAG [0]
;  836      0893  2       THEN
;  837      0894  3           BEGIN
;  838      0895  3           FLAG [0] = 1;
;  839      0896  3           LOCAL_LUN = LUB$K_ILUN_MIN;
;  840      0897  3           END
;  841      0898  2       ELSE
;  842      0899  3           BEGIN
;  843      0900  3           LOCAL_LUN = .LUN [0] + 1;
;  844      0901  2           END;
;  845      0902  2
;  846      0903  2       !+
;  847      0904  2       ! While the unit number is in range, look for a LUB entry that is
;  848      0905  2       ! non-zero.
;  849      0906  2       !-
;  850      0907  2
;  851      0908  2       WHILE (.LOCAL_LUN LEQ LUB$K_LUN_MAX) DO
;  852      0909  3           BEGIN
;  853      0910  3           IF .FOR$$AA_LUB_TAB [.LOCAL_LUN] NEQ 0
;  854      0911  3           THEN
;  855      0912  4               BEGIN
;  856      0913  4               LUN [0] = .LOCAL_LUN;
;  857      0914  4               RETURN;
;  858      0915  3               END;
;  859      0916  3           LOCAL_LUN = .LOCAL_LUN + 1;
;  860      0917  2           END;
;  861      0918  2
;  862      0919  2       !+
;  863      0920  2       ! We dropped out of the loop.  Return failure.
;  864      0921  2       !-
;  865      0922  2
;  866      0923  2       FLAG [0] = 0;
;  867      0924  2
;  868      0925  2       RETURN;
;  869      0926  1       END;                                            ! End of FOR$$NEXT_LUN routine



                                           0000 00000            .ENTRY  FOR$$NEXT_LUN, Save nothing                   ; 0835
                       09         04    BC   E8 00002            BLBS    @FLAG, 1$                                     ; 0892
                04     BC               01   D0 00006            MOVL    #1, @FLAG                                     ; 0895
                       50               08   CE 0000A            MNEGL   #8, LOCAL_LUN                                 ; 0896
                                        05   11 0000D            BRB     2$                                            ; 0892
        50      08     BC               01   C1 0000F 1$:        ADDL3   #1, @LUN, LOCAL_LUN                           ; 0900
              00000077 8F               50   D1 00014 2$:        CMPL    LOCAL_LUN, #119                               ; 0908
                                        12   14 0001B            BGTR    4$                                            ;
                           00000000'EF40     D5 0001D            TSTL    FOR$$AA_LUB_TAB+32[LOCAL_LUN]                 ; 0910
                                        05   13 00024            BEQL    3$                                            ;
                08     BC               50   D0 00026            MOVL    LOCAL_LUN, @LUN                               ; 0913
                                             04 0002A            RET                                                   ; 0912
                                        50   D6 0002B 3$:        INCL    LOCAL_LUN                                     ; 0916
                                        E5   11 0002D            BRB     2$                                            ; 0908
                                  04    BC   D4 0002F 4$:        CLRL    @FLAG                                         ; 0923
                                             04 00032            RET                                                   ; 0926
```

```
; Routine Size:  51 bytes,    Routine Base:  _FOR$CODE + 0207

;  870          0927  1
```

```
1 %SBTTL'FOR$$FP_MATCH - Find current incarnation'
1 GLOBAL ROUTINE FOR$$FP_MATCH (
1         SIG_FP                                  ! of ISB that has SIG_FP
1     ) : CALL_CCB NOVALUE =                       ! in ISB$A_USER_FP
1
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       FOR$$FP_MATCH is part of the I/O in progress handling scheme.
1 !       It is called with one argument, the value of the frane pointer
1 !       desired.  It looks through the current ISB chain until it finds
1 !       an ISB that has the desired FP in ISB$A_USER_FP.  This means that
1 !       that ISB was the one in effect when the I/O in progress handler
1 !       was established.  If it finds one, external register CCB is set
1 !       to the CCB of that ISB.  If no match is found, there is something
1 !       seriously wrong in the database so error OTS$_INTDATCOR is
1 !       signalled.
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       CALL FOR$$FP_MATCH (SIG_FP)
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       SIG_FP.rl.v             The FP present in the signal mechanism
1 !                               list when the I/O in progress handler
1 !                               was signalled.  This value is searched for
1 !                               in the current ISB chain.
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       FOR$$AA_LUB_TAB         Table of pointers to LUBs.
1 !       FOR$$A_CUR_LUB          Address of current LUB.
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       CCB                     This register is set to the address of the
1 !                               ISB/LUB/RAB block that has SIG_FP in its
1 !                               ISB$A_USER_FP.
1 !
1 ! RETURN VALUE:
1 !
1 !       NONE
1 !
1 ! SIDE EFFECTS:
1 !
1 !       Signals OTS$_INTDATCOR (Internal data corrupted in Run-Time Library)
1 !       if no ISB is found that matches SIG_FP.
1 !--
1
2   BEGIN
2
2   EXTERNAL REGISTER
2       CCB : REF $FOR$CCB_DECL;
2
2   LOCAL
2       LOGICAL_UNIT;                              ! Logical unit number of current LUB
```

```
;   929          0985  2
;   930          0986  2          !+
;   931          0987  2          ! Get current LUB
;   932          0988  2          !-
;   933          0989  2
;   934          0990  2          CCB = .FOR$$A_CUR_LUB;
;   935          0991  2
;   936          0992  2          !+
;   937          0993  2          ! Search through ISB chain to find matching FP
;   938          0994  2          !-
;   939          0995  2
;   940          0996  2          WHILE .CCB NEQ 0 DO
;   941          0997  3              BEGIN
;   942          0998  3              LOGICAL_UNIT = .CCB [LUB$W_LUN];
;   943          0999  3
;   944          1000  3              IF .CCB [ISB$A_USER_FP] EQL .SIG_FP
;   945          1001  3              THEN
;   946          1002  3                  RETURN;
;   947          1003  3
;   948          1004  3              CCB = .CCB [ISB$A_PREVIOUS_LUB];
;   949          1005  2              END;
;   950          1006  2
;   951          1007  2          !+
;   952          1008  2          ! If we get here, then there must not have been a match.
;   953          1009  2          ! This should never happen, therefore signal an error.
;   954          1010  2          !-
;   955          1011  2
;   956          1012  2          FOR$$SIG_DATCOR ();
;   957          1013  2          RETURN;
;   958          1014  1          END;



                                        0000 00000          .ENTRY  FOR$$FP_MATCH, Save nothing                     ; 0929
                   5B 00000000'    EF    D0 00002          MOVL    FOR$$A_CUR_LUB, CCB                              ; 0990
                                   13    13 00009 1$:      BEQL    2$                                               ; 0996
                   50        C6    AB    32 0000B          CVTWL   -58(CCB), LOGICAL_UNIT                           ; 0998
             04    AC      FF4C    CB    D1 0000F          CMPL    -180(CCB), SIG_FP                                ; 1000
                                   0E    13 00015          BEQL    3$                                               ;
                   5B      FF48    CB    D0 00017          MOVL    -184(CCB), CCB                                   ; 1004
                                   EB    11 0001C          BRB     1$                                               ; 0996
            00000000G  00          00    FB 0001E 2$:      CALLS   #0, FOR$$SIG_DATCOR                              ; 1012
                                         04 00025 3$:      RET                                                      ; 1014

; Routine Size:  38 bytes,    Routine Base:  _FOR$CODE + 023A
```

```
1 %SBTTL 'INITIALIZE_INTFIL_QUEUE - Initialize INTFIL_QUEUE'
1 ROUTINE INITIALIZE_INTFIL_QUEUE
1     : NOVALUE =
1
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       Initializes INTFIL_QUEUE to be an empty queue.
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       INITIALIZE_INTFIL_QUEUE ()
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       NONE
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       INTFIL_QUEUE
1 !       V_INTFIL_QUEUE_INIT
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       INTFIL_QUEUE
1 !       V_INTFIL_QUEUE_INIT
1 !
1 ! COMPLETION STATUS:
1 !
1 !       NONE
1 !
1 ! SIDE EFFECTS:
1 !
1 !       Makes INTFIL_QUEUE an empty queue.
1 !
1 ! SIGNALLED ERRORS:
1 !
1 !       NONE
1 !--
1
2     BEGIN
2
2     LOCAL
2       AST_STATUS;                                 ! Previous AST enable status
2
2     BUILTIN
2       TESTBITCS;
2
2     !+
2     ! Disable ASTs.
2     !-
2
2     AST_STATUS = $SETAST (ENBFLG = 0);
2
2     !+
2     ! If V_INTFIL_QUEUE_INIT is still clear, initialize INTFIL_QUEUE to
2     ! be an empty queue.  Set V_INTFIL_QUEUE_INIT.
```

```
; 1017          1072  2      !-
; 1018          1073  2
; 1019          1074  2      IF TESTBITCS (V_INTFIL_QUEUE_INIT)
; 1020          1075  2      THEN
; 1021          1076  3          BEGIN
; 1022          1077  3          INTFIL_QUEUE [0] = INTFIL_QUEUE;            ! Set forward link
; 1023          1078  3          INTFIL_QUEUE [1] = .INTFIL_QUEUE [0];       ! Set backward link
; 1024          1079  2          END;
; 1025          1080  2
; 1026          1081  2      !+
; 1027          1082  2      ! Reenable ASTs if previously enabled.
; 1028          1083  2      !-
; 1029          1084  2
; 1030          1085  2      IF .AST_STATUS EQL SS$_WASSET
; 1031          1086  2      THEN
; 1032          1087  2          $SETAST (ENBFLG = 1);
; 1033          1088  2
; 1034          1089  2      RETURN;
; 1035          1090  2
; 1036          1091  1      END;                                            ! End of routine INITIALIZE_INTFILQUEUE


                                                                      .EXTRN  SYS$SETAST

                                              000C 00000 INITIALIZE_INTFIL_QUEUE:
                                                                      .WORD   Save R2,R3                              ; 1016
                        53 00000000G   00   9E 00002          MOVAB   SYS$SETAST, R3                          ;
                        52 00000000'   EF   9E 00009          MOVAB   INTFIL_QUEUE, R2                        ;
                                       7E   D4 00010          CLRL    -(SP)                                   ; 1067
                        63             01   FB 00012          CALLS   #1, SYS$SETAST                          ;
           07        08 A2             00   E2 00015          BBSS    #0, V_INTFIL_QUEUE_INIT, 1$             ; 1074
                        62             62   9E 0001A          MOVAB   INTFIL_QUEUE, INTFIL_QUEUE              ; 1077
                     04 A2             62   D0 0001D          MOVL    INTFIL_QUEUE, INTFIL_QUEUE+4            ; 1078
                        09             50   D1 00021 1$:      CMPL    AST_STATUS, #9                          ; 1085
                                       05   12 00024          BNEQ    2$                                      ;
                                       01   DD 00026          PUSHL   #1                                      ; 1087
                        63             01   FB 00028          CALLS   #1, SYS$SETAST                          ;
                                            04 0002B 2$:      RET                                             ; 1091

; Routine Size:  44 bytes,    Routine Base:  _FOR$CODE + 0260
; 1038          1092  1 END                                                   ! End of module FOR$$CB
; 1039          1093  1
; 1040          1094  0 ELUDOM




                                                                    FOR$$CB_RET==         FOR$$CB_POP

;                                         PSECT SUMMARY
;
;        Name                       Bytes                         Attributes
;
;     _FOR$DATA                        544  NOVEC,  WRT,  RD ,NOEXE,NOSHR,  LCL,  REL,  CON,  PIC,ALIGN(2)
;     _FOR$CODE                        652  NOVEC,NOWRT,  RD ,  EXE,  SHR,  LCL,  REL,  CON,  PIC,ALIGN(2)



;                                  Library Statistics
;
;                                                 -------- Symbols --------        Pages        Processing
;        File                                     Total   Loaded   Percent        Mapped       Time
;
;     _$255$DUA28:[SYSLIB]STARLET.L32;1           9776       23         0           581        00:01.0
;     _$255$DUA28:[FORRTL.OBJ]FORLIB.L32;1         711      192        27            52        00:00.5
;     _$255$DUA28:[FORRTL.OBJ]RTLLIB.L32;1          36        0         0             8        00:00.1




;                                          COMMAND QUALIFIERS

;       BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/NOTRACE/LIS=LIS$:FORCB/OBJ=OBJ$:FORCB MSRC$:FORCB/UPDATE=(ENH$:FORCB)

; Size:           652 code + 544 data bytes
; Run Time:          00:17.3
; Elapsed Time:      00:43.8
; Lines/CPU Min:       3794
; Lexemes/CPU-Min:  14184
; Memory Used:  117 pages
; Compilation Complete
```

0179 AH-BT13A-SE
VAX/VMS V4.0

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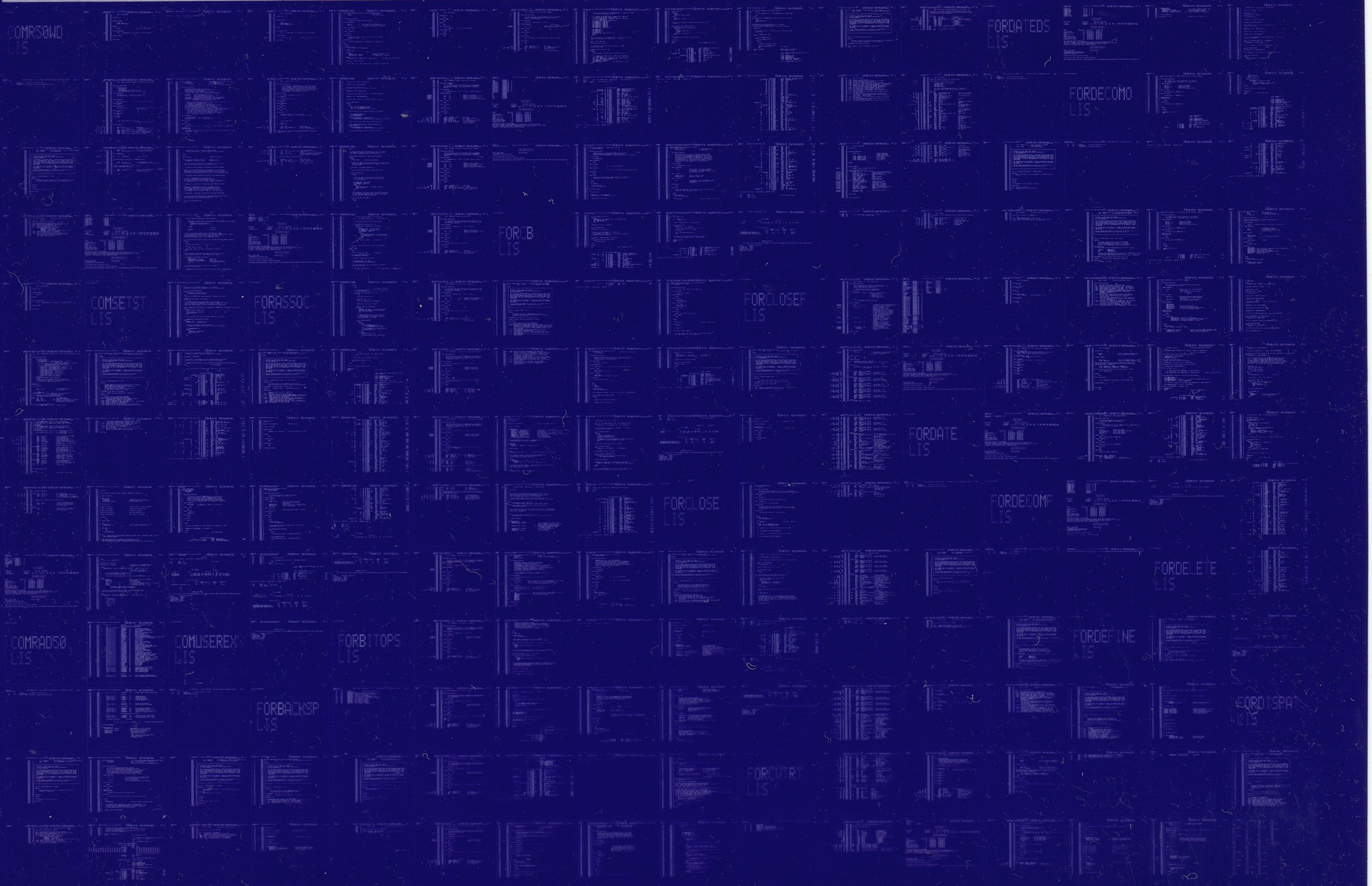
COMR50WD
LIS

FORDATEDS
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FORDECOMO
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FORCB
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FORDECOMP
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FORDELETE
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COMRAD50
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COMUSEREX
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FORBITOPS
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FORDEFINE
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FORBACKSP
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FORDISPA
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FORCVTRI
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